Chemical characterization and antioxidant activity of three medicinal Apiaceae species

ABSTRACT

Centella asiatica (‘Pegaga’ = Malaysia) is well known plant that has been used as one of the ingredients in pharmaceutical and cosmetic industries. Using liquid chromatography with diode array and electrospray ionization/mass spectrometry (LC–DAD–ESI/MS) analysis, chemical profiling of three different Pegaga extracts (C. asiatica, H. bonariensis and H. sibthorpioides) revealed variations in their metabolite profile. Our findings showed that triterpenes of C. asiatica were characterized by the ursane-type triterpenes (madecassoside, asiaticoside, madecassic acid, and asiatic acid), while the two Hydrocotyle species consisted of oleanane-type triterpenes (barrigenol derivatives). Other variations are due to the difference in phenolic and flavonoid constituents. The three Pegaga extracts were also evaluated for their total phenolic content (TPC), 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radicals, and xanthine oxidase inhibition (XOI) activities. The results showed that C. asiatica has the most potent antioxidant activity (TPC = 72.09 mg/100 g DW; DPPH = 72.99 μg/ml; XOI = 87.68 μg/ml) as compared to H. bonariensis (TPC = 28.55 mg/100 g DW; DPPH = 22.43 μg/ml; XOI = 32.23 μg/ml) and H. sibthorpioides (TPC = 56.23 mg/100 g DW; DPPH = 37.86 μg/ml; XOI = 14.73. μg/ml).

Keyword: C. asiatica; H. bonariensis; H. sibthorpioides; HPLC–DAD–ESIMS